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National Priority Chemicals Trends Report (2000-2004)

Section 4
Chemical Specific Trends Analyses for Priority Chemicals (2000−2004): Pentachlorophenol

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Pentachlorophenol

Chemical Information:

CAS Number − 87−86−5

Alternate Names − 2,3,4,5,6−Pentachlorophenol

General Uses − Pentachlorophenol was used as a biocide to kill small organisms and is now used as a wood preservative to protect wood from decay and insect attack.

Potential Hazards − Pentachlorophenol is toxic; inhalation, ingestion, or skin contact may cause severe injury or death.

Summary Analysis:

- NATIONAL: In 2004, 15 facilities reported approximately 117,000 pounds of pentachlorophenol; this is the fewest number of facilities reporting this chemical in 2000−2004. Compared to the quantity of pentachlorophenol reported in 2000, there was an increase of approximately 47,000 pounds or 68 percent in 2004.
- REGIONAL: In 2004, facilities in five of the EPA regions reported pentachlorophenol. Compared to the quantities reported in 2000, facilities in EPA Region 4 reported a large increase of approximately 84,000 pounds. Most of this increase was reported by two facilities, one each in Mississippi and South Carolina.
- STATES: Facilities in three states (Mississippi, South Carolina, and Missouri) reported approximately 93 percent of the total quantity of this chemical in 2004.
- MANAGEMENT: Since 2000, facilities primarily treated pentachlorophenol offsite, including 66 percent of the total quantity in 2004. Energy recovery was used for approximately 32 percent of the total quantity. Only a small quantity of pentachlorophenol was recycled in 2004.
- FACILITIES: Of the 15 facilities that reported pentachlorophenol in 2004, two facilities accounted for 84 percent of the total quantity.
- INDUSTRY SECTOR: In 2004, all 15 facilities that reported pentachlorophenol were in SIC 2491 (Wood preserving). Compared to quantities reported in both 2000 and 2003, facilities in SIC 2491 reported a large increase in 2004. Two facilities accounted for most of the increase, attributing the increase to the combination of increased production of pentachlorophenol treated wood and a different technique for estimating the concentration of pentachlorophenol in waste streams.

National Trends:

Exhibit 4.226 shows the number of facilities that reported pentachlorophenol from 2000 to 2004 and the quantities that were managed via disposal, treatment, energy recovery, and recycling. In 2004, 15 facilities reported approximately 117,000 pounds of pentachlorophenol; this is the fewest number of facilities reporting this chemical for 2000−2004. Compared to the quantity of pentachlorophenol reported in 2000, there was an increase of approximately 47,000 pounds or 68 percent in 2004; the quantity had been steadily decreasing since 2000.

Since 2000, facilities primarily treated pentachlorophenol, including 66 percent of the total quantity in 2004. From 2000 to 2003, facilities used energy recovery and disposal for only approximately 13 percent of the pentachlorophenol. However, in 2004, the energy recovery quantity increased dramatically to approximately 32 percent of the total quantity. Only a small quantity of pentachlorophenol was recycled in 2004.

Exhibit 4.226. National Management Method Trends for Pentachlorophenol, 2000−2004

Management Methods for Pentachlorophenol and Number of Facilities	2000	2001	2002	2003	2004	Percent Change (2000−2004)	Management Method − Percent of Quantity of This PC (2004)
Number of Facilities	24	25	20	18	15	−37.5%	-
Disposal Quantity (pounds)	1,573	2,198	112	1,381	1,966	25.0%	1.7%
Energy Recovery Quantity (pounds)	4,019	5,017	4,319	2,153	37,625	836.1%	32.1%
Treatment Quantity (pounds)	64,240	47,123	32,425	24,761	77,673	20.9%	66.2%
Priority Chemical Quantity (pounds)	69,832	54,339	36,856	28,295	117,264	67.9%	-
Recycling Quantity (pounds)*	10,000	3,160	3,261	54	72	−99.3%	-

*Note: Waste minimization is the emphasis of this Report. As such, we primarily focus on quantities of PCs that are managed via onsite/offsite disposal, treatment, or energy recovery because we believe these PC quantities offer the greatest opportunities for waste minimization. Because recycled quantities of PCs are already directed to their best uses, they are considered separate and distinct from the quantities of PCs not recycled. Throughout this section, the recycled quantity is presented to provide some perspective regarding the quantity of this PC already recycled compared to the quantities that are managed via disposal, treatment, and energy recovery and thus potentially available for waste minimization.

Exhibit 4.227 shows the number of facilities that reported pentachlorophenol within various ranges of quantities. Of the 15 facilities that reported pentachlorophenol in 2004, two facilities accounted for 84 percent of the total quantity.

Exhibit 4.227. Distribution of Quantities by Facilities Reporting Pentachlorophenol, 2004

Pentachlorophenol (117,264 pounds)		
Quantity Reported	Number of Facilities Reporting This Quantity (2004)	Percent of Total Quantity of This PC (2004)
up to 10 pounds	0	0.0%
11 − 100 pounds	2	less than 0.1%
101 − 1,000 pounds	7	3.3%
1,001 − 10,000 pounds	4	12.3%
10,001 − 100,000 pounds	2	84.4%
100,001 − 1 million pounds	0	0.0%
> 1 million pounds	0	0.0%

EPA Regional Trends:

Exhibit 4.228 shows the quantity of pentachlorophenol reported by facilities in eight EPA regions in 2000 to 2004. In 2004, facilities in five of the EPA regions reported pentachlorophenol.

Compared to the quantities reported in 2000, facilities in EPA Region 4 reported a large increase of approximately 84,000 pounds. Most of this increase was reported by two facilities, one each in Mississippi and South Carolina. These facilities attributed the increase to the combination of increased production of pentachlorophenol treated wood and a different technique for estimating the concentration of pentachlorophenol in waste streams. In EPA Region 3, the decreased quantity occurred because a facility that had reported pentachlorophenol for 2000−2002, no longer reported it.

Compared to quantities reported in 2003, facilities in EPA Region 4 reported a large increase of approximately 82,000 pounds. As previously noted, most of this increase was reported by two facilities, one each in Mississippi and South Carolina.

Exhibit 4.228. Regional Quantity of Pentachlorophenol, 2000−2004

EPA Region	2000 (pounds)	2001 (pounds)	2002 (pounds)	2003 (pounds)	2004 (pounds)	Percent Change in Quantity (2000−2004)	Percent of Total quantity of This PC (2004)
3	42,012	20,298	715	0	0	−100.0%	0.0%
4	17,320	26,337	28,263	19,360	101,266	484.7%	86.4%
5	0	2,697	953	589	0	NA	0.0%
6	192	541	4,003	4,105	4,205	2090.3%	3.6%
7	2	637	726	1,459	9,015	450650.0%	7.7%
8	0	599	555	0	0	NA	0.0%
9	3,400	755	1,099	955	607	−82.1%	0.5%
10	6,906	2,475	542	1,827	2,171	−68.6%	1.9%
Total	**69,832**	**54,339**	**36,856**	**28,295**	**117,264**	**67.9%**	**100.0%**

Exhibit 4.229. Distribution of Facilities Reporting Pentachlorophenol in 2004 and the Quantities of Pentachlorophenol Reported in 2004, by EPA Region

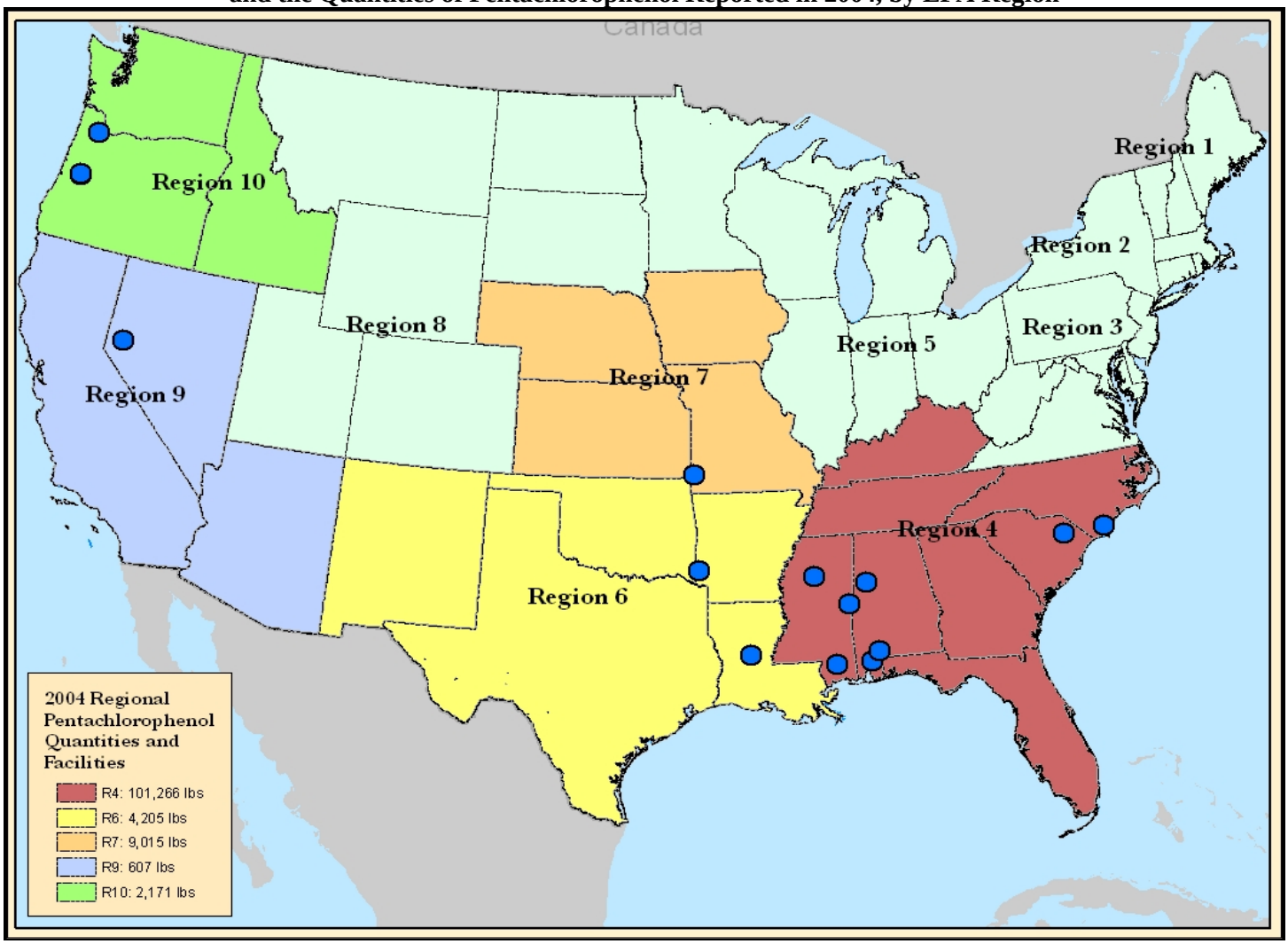

Exhibit 4.230 shows how facilities, by EPA region, managed pentachlorophenol in 2004. In 2004, facilities used offsite treatment for approximately 66 percent of the pentachlorophenol and offsite energy recovery for approximately 32 percent of the total quantity. Two facilities in EPA Region 6 reported most of the offsite disposal; these facilities land disposed approximately 45 percent of the pentachlorophenol.

State Trends:

Facilities in 15 states reported pentachlorophenol in 2000−2004 (Exhibit 4.231). Facilities in three states (Mississippi, South Carolina, and Missouri) reported approximately 93 percent of the total quantity of this chemical in 2004. Compared to quantities reported in both 2000 and 2003, facilities in Mississippi and South Carolina reported large increases in 2004. One facility in each of these two states accounted for most of the increase; both facilities attributed the increase to the combination of increased production of pentachlorophenol treated wood and a different technique for estimating the concentration of pentachlorophenol in waste streams. In Maryland, the decreased quantity occurred because a facility that had reported pentachlorophenol for 2000−2002, no longer reported it.

Exhibit 4.230. Regional Management Methods for Pentachlorophenol, 2004

EPA Region	Quantity (pounds) of Pentachlorophenol (2004)	Percent of Total Quantity of Pentachlorophenol (2004)	Disposal (pounds)		Energy Recovery (pounds)		Treatment (pounds)		Recycling (pounds)	
			Onsite Disposal	Offsite Disposal	Onsite Energy Recovery	Offsite Energy Recovery	Onsite Treatment	Offsite Treatment	Onsite Recycling	Offsite Recycling
4	101,266	86.4%	0	5	0	28,780	236	72,245	52	0
6	4,205	3.6%	0	1,903	0	0	0	2,302	0	0
7	9,015	7.7%	0	0	0	8,845	0	170	0	0
9	607	0.5%	0	0	0	0	0	607	0	0
10	2,171	1.9%	0	58	0	0	0	2,112	0	20
Total	**117,264**	**100.0%**	**0**	**1,966**	**0**	**37,625**	**236**	**77,437**	**52**	**20**

Exhibit 4.231. State Quantity Trends for Facilities Reporting Pentachlorophenol, 2000–2004

State	Total Quantity (pounds) of Pentachlorophenol					Change in Quantity (2000–2004)	Percent Change in Quantity (2000–2004)	Percent of Total Quantity of This PC (2004)
	2000	2001	2002	2003	2004			
MS	3,068	6,753	18,505	10,861	55,776	52,708	1718.0%	47.6%
SC	2,358	13,025	5,511	6,186	43,660	41,302	1751.6%	37.2%
MO	2	637	726	1,459	9,015	9,013	450650.0%	7.7%
AR	102	508	3,944	2,770	2,705	2,603	2552.3%	2.3%
OR	5,182	1,624	542	1,827	2,171	−3,011	−58.1%	1.9%
LA	90	33	59	1,335	1,500	1,410	1566.7%	1.3%
AL	6,358	3,229	2,900	924	1,017	−5,341	−84.0%	0.9%
NC	3,684	1,430	1,011	1,157	813	−2,871	−77.9%	0.7%
NV	1,400	445	1,099	955	607	−793	−56.6%	0.5%
MN	0	2,697	953	589	0	0	NA	0.0%
GA	1,852	1,900	336	232	0	−1,852	−100.0%	0.0%
MD	42,012	20,298	715	0	0	−42,012	−100.0%	0.0%
SD	0	599	555	0	0	0	NA	0.0%
WA	1,724	851	0	0	0	−1,724	−100.0%	0.0%
CA	2,000	310	0	0	0	−2,000	−100.0%	0.0%
Total	**69,832**	**54,339**	**36,856**	**28,295**	**117,264**	**47,432**	**67.9%**	**100.0%**

Exhibits 4.232, 4.233, and 4.234 show trends for the quantities of pentachlorophenol reported by facilities in these five states.

Exhibit 4.232. Missouri, Arkansas, and Mississippi Trends for Pentachlorophenol, 2000–2004

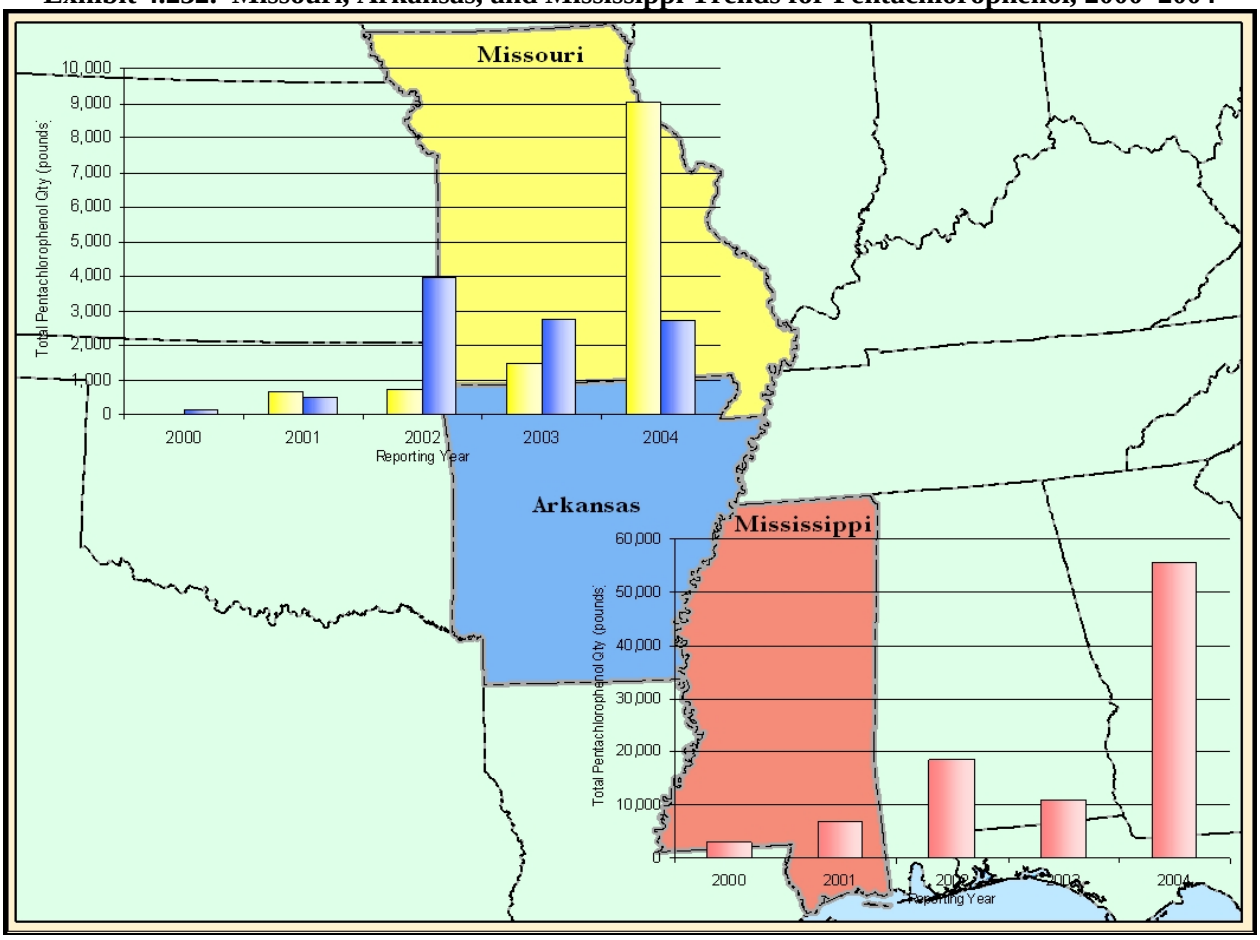

Exhibit 4.233. South Carolina Trends for Pentachlorophenol, 2000–2004

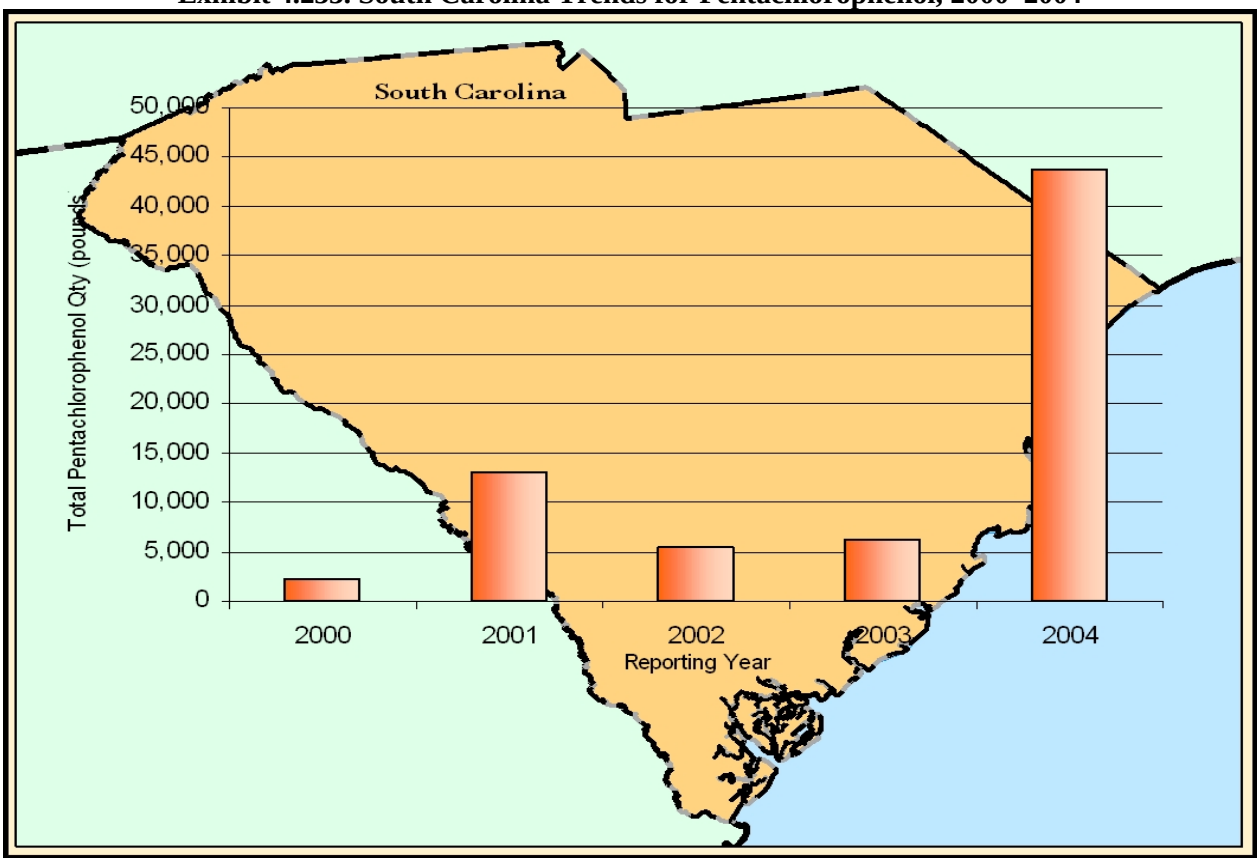

Exhibit 4.234. Oregon Trends for Pentachlorophenol, 2000–2004

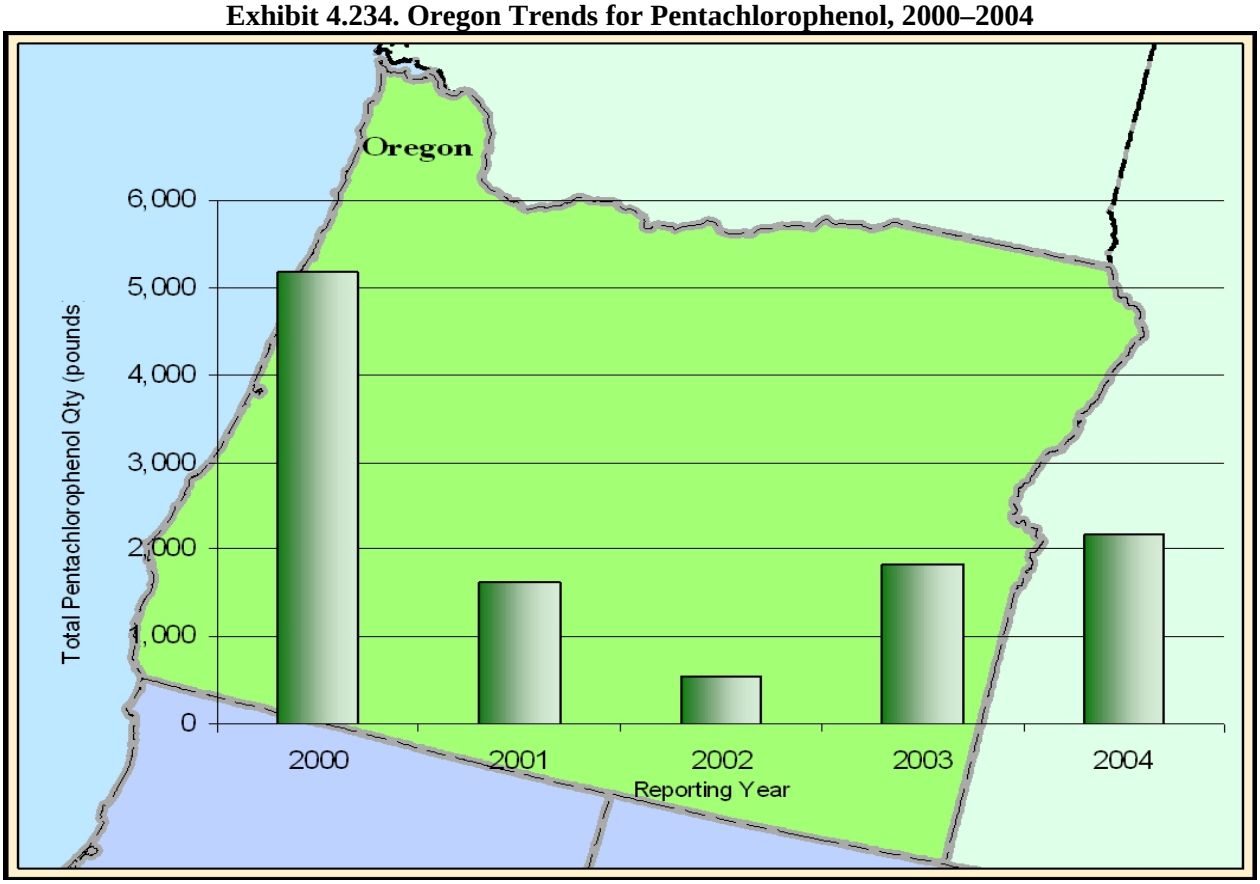

Exhibit 4.235 shows how facilities managed pentachlorophenol, by state, in 2004. Facilities in all nine states used offsite treatment to manage pentachlorophenol; facilities in four of the states also used offsite energy recovery. Facilities in Louisiana and Arkansas land disposed a significant portion of their pentachlorophenol. Very little recycling of pentachlorophenol was reported in 2004.

Exhibit 4.235. State Management Methods for Pentachlorophenol, 2004

State	Total Quantity of Pentachlorophenol (2004)	Onsite Disposal (pounds)	Offsite Disposal (pounds)	Onsite Energy Recovery (pounds)	Offsite Energy Recovery (pounds)	Onsite Treatment (pounds)	Offsite Treatment (pounds)	Onsite Recycling (pounds)	Offsite Recycling (pounds)
AL	1,017	0	0	0	688	72	257	52	0
AR	2,705	0	803	0	0	0	1,902	0	0
LA	1,500	0	1,100	0	0	0	400	0	0
MO	9,015	0	0	0	8,845	0	170	0	0
MS	55,776	0	5	0	6,311	25	49,435	0	0
NC	813	0	0	0	0	40	773	0	0
NV	607	0	0	0	0	0	607	0	0
OR	2,171	0	58	0	0	0	2,112	0	20
SC	43,660	0	0	0	21,780	99	21,780	0	0
Total	**117,264**	**0**	**1,966**	**0**	**37,625**	**236**	**77,437**	**52**	**20**

Industry Sector (SIC) Trends:

Exhibit 4.236 shows the quantity of pentachlorophenol reported by facilities in four industry sectors for 2000−2004. In 2004, all 15 facilities that reported pentachlorophenol were in SIC 2491 (Wood preserving). Compared to quantities reported in both 2000 and 2003, facilities in SIC 2491 reported a large increase in 2004. Two facilities accounted for most of the increase, attributing the increase to the combination of increased production of pentachlorophenol−treated wood and a different technique for estimating the concentration of pentachlorophenol in waste streams.

Exhibit 4.237 shows how 15 facilities in the wood preserving industry sector managed pentachlorophenol in 2004. Facilities used offsite treatment for approximately 66 percent of the pentachlorophenol and offsite energy recovery for approximately 32 percent. Land disposal was only used for less than 2,000 pounds or approximately 2 percent of the pentachlorophenol.

Exhibit 4.236. Industry Sectors Containing Pentachlorophenol, 2000−2004

Primary SIC	SIC Description	Number of Facilities That Reported Pentachlorophenol (2004)	2000 (pounds)	2001 (pounds)	2002 (pounds)	2003 (pounds)	2004 (pounds)	Change in Quantity (2000−2004)	Percent of Total Quantity of This PC (2004)
2491	Wood preserving	15	27,378	34,016	36,116	28,286	117,264	89,886	100.0%
2869	Industrial organic chemicals, nec	0	42,012	0	0	0	0	−42,012	0.0%
2879	Pesticides and agricultural chemicals, nec	0	0	20,298	715	0	0	0	0.0%
5169	Chemicals and allied products, nec	0	442	25	25	9	0	−442	0.0%
	Total	**15**	**69,832**	**54,339**	**36,856**	**28,295**	**117,264**	**47,432**	**100.0%**

Exhibit 4.237. Industry Sector Management Methods for Pentachlorophenol, 2004

Primary SIC	SIC Description	Total Quantity of Pentachlorophenol (2004	Percent of Total Quantity (2004)	Disposal (pounds)		Energy Recovery (pounds)		Treatment (pounds)		Recycling (pounds)	
				Onsite Disposal	Offsite Disposal	Onsite Energy Recovery	Offsite Energy Recovery	Onsite Treatment	Offsite Treatment	Onsite Recycling	Offsite Recycling
2491	Wood preserving	117,264	100.0%	0	1,966	0	37,625	236	77,437	52	20
	Total	**117,264**	**100.0%**	**0**	**1,966**	**0**	**37,625**	**236**	**77,437**	**52**	**20**